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September 19, 1958

Dr. George Lefevre
National Science Foundation
Washington 25, D.C.

Dear George:

Thank you for sending me your annual report for FY 1958. I am sure you must be gratified at the healthy growth of the ~~Genetic~~ Biology program, notwithstanding the difficulties you quote. I think it is fair to say that it is during the last year or two that the program has begun to make a strong and constructive impact on genetic research in the U.S. as a whole, as its scope has increased. I would remark that you have, if anything, understated how much further the NSF could go in support of genetics in terms of research productivity and the development of younger workers. It is still true, as you remark, that a surprising number of scientists are unaware of present opportunities for research. Even more to the point, many scientists (and I would not entirely exclude myself) have not adapted to the point where they realize how far they can improve their efficiency and scope by the sober expenditure of funds on a scale that has become thinkable only during the last few years. The conservatism of your own scientific advisers (and again I would not exclude myself) in reviewing non-research expenditures must illustrate this, if they carry over the same penurious attitudes in the administration of their own budgets. There are, of course, some exceptional figures who may err in the opposite direction, but they are surprisingly rare among workers of proven scientific merit. This is to say, that many working scientists have been conditioned by the penurious climate in which science has had to live until now, and we still have to learn to take seriously the immense national benefit that presently flows from research investment. As a result, most laboratories, as most universities, are operating on a depression scale, lagging far behind the vigorous growth of our economy and personal standard of living in the past 20 years.

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It may illustrate the point if I mention that whether or not to make a long distance telephone call is still a point of decision.

I don't know how to temper these incongruities, and the last thing I would advocate in their place is any sense of wastefulness. But from a financial point of view many of our best scientists still don't ~~look~~ take themselves and their work seriously enough, and I would say we had not remotely approached saturation until this adjustment has taken place.

You are well aware of one procedural difficulty, that you allocate an entire grant from your current year's budget. Given your present scale, it is obvious you can hardly afford to make the long term commitments your panel would other wise recommend. Not only does this multiply the paper work on the part both of your investigator and your administrtaion, and complicate long term research plans, but it may also discourage some types of applications and the work that underlies them. On the other hand, the system is an advantage during an interval of progressive improvement, since it lets you phase out the impact of intermit-

tent fluctuations in your budget without too drastically changing your standards of acceptance, up or down as the case may be. Compared to the number of grants awarded, and their annual allocation, this variable, the duration of the grant, can perhaps be adjusted with the least pain: but it does have its penalties too.

You rightly placed a good deal of emphasis on non-research activities. I think it would be a wise choice to allocate some definite percentage of your budget to them so they do not too blatantly ~~interfere~~ compete with the research grants. On the other hand, I am rather jaundiced about symposia and feel that their multiplication is a serious symptom of the breakdown of our basic means of communication, through regular publication. Rather than topical help through numerous symposia, I would encourage more and more attention to the basic problems, as I know the NSF has been doing. It is still true to say that we are relying almost entirely on 18th century methods of communication (viz. the printed page) for 20th century science; in general, the actual day to day operation of a scientific laboratory and the diffusion of its experimental results are the least sophisticated examples of contemporary technology. I would consider that, in view of the complexity of the existing store of scientific knowledge, and its phenomenal rate of accretion, we would do well to divert at least 20% of our total national research budget to the communication phase: it is quite obvious that even in the basic sciences which probably show the highest proportion, we may be running at only a few percent at most. I am happy to note the NSF's interest in basic aspects of this problem (as evidenced by some of the grants listed in last year's report) and by the growing awareness of fellowscientists of the gravity of the problem. Note for example the NRC'S conference on documentation scheduled for this October or November.

I am sure there is nothing in this letter new to you, and I suspect you may be as interested in the committing of these ideas to paper as in their implicit substance. Perhaps I'll see you later this week at the NIH study section.

Sincerely,

Joshua Lederberg